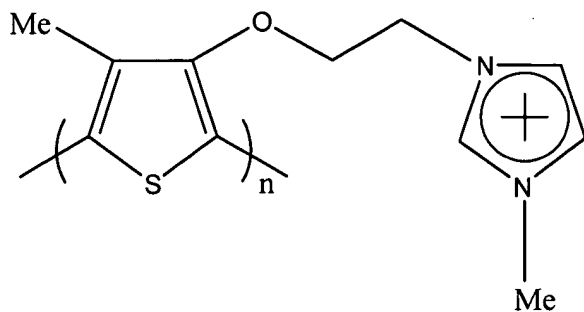


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AMENDMENTS TO THE CLAIMS

1. (Original) An optical sensor for detecting a target comprising a single-stranded aptamer complementary to said target, and a water-soluble cationic polythiophene derivative of the following formula:



wherein “n” is an integer ranging from 6 to 100.

2. (Currently amended) ~~The An~~ optical sensor ~~of as defined in~~ claim 1, wherein said target is selected from the group consisting of potassium ions, small organic molecules, amino acids, proteins, whole cells and nucleotides.

3. (Currently amended) ~~The An~~ optical sensor ~~of as defined in~~ claim 1, wherein said aptamer is an oligonucleotide.

4. (Currently amended) ~~The An~~ optical sensor ~~of as defined in~~ claim 3, wherein said oligonucleotide is single-stranded DNA.

5. (Currently amended) ~~The An~~ optical sensor ~~of as defined in~~ claim 4, wherein said single-stranded DNA has the following sequence:

5'-GGTTGGTGTGGTTGG-3'.

6. (Currently amended) ~~The An~~ optical sensor ~~of as defined in~~ claim 5, wherein said target is human α -thrombin.

7. (Currently amended) ~~The An~~ optical sensor ~~of as defined in~~ claim 4, wherein said single-stranded DNA has the following sequence:

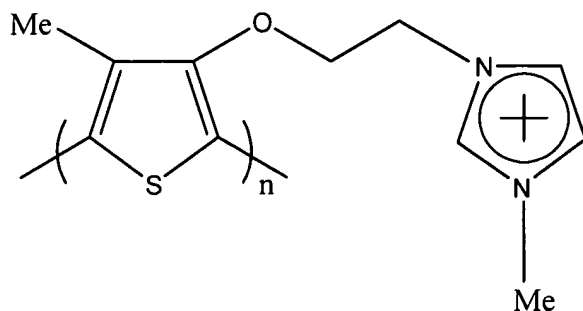
5'-ATTATACCTGGGGGAGTATTGCGGAGGAAGGTATAAT-3'.

8. (Currently amended) ~~The An~~ optical sensor ~~of as defined in~~ claim 7, wherein said target is D-adenosine.

9. (Original) A method for detecting a target comprising the steps of:

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a) contacting a sample suspected of containing the target with an optical sensor, said optical sensor including a single-stranded aptamer complementary to said target, and a water soluble cationic polythiophene derivative of the following formula:



wherein “n” is an integer ranging from 6 to 100; and

b) detecting binding of the aptamer to the target by measuring an optical signal.

10. (Currently amended) ~~A method as defined in~~ The method of claim 9, wherein said optical signal is a UV-Visible absorption or fluorescence spectrum.

11. (Currently amended) ~~A method as defined in~~ The method of claim 10, wherein said target is selected from the group consisting of potassium ions, small organic molecules, amino acids, proteins, whole cells and nucleotides.

12. (Currently amended) ~~A method as defined in~~ The method of claim 10, wherein said aptamer is an oligonucleotide.

13. (Currently amended) ~~A method as defined in~~ The method of claim 12, wherein said oligonucleotide is single-stranded DNA.

14. (Currently amended) ~~A method as defined in~~ The method of claim 13, wherein said single-stranded DNA has the following sequence:



15. (Currently amended) ~~A method as defined in~~ The method of claim 14, wherein said target is human α -thrombin.

16. (Currently amended) ~~A method as defined in~~ The method of claim 13, wherein said single-stranded DNA has the following sequence:

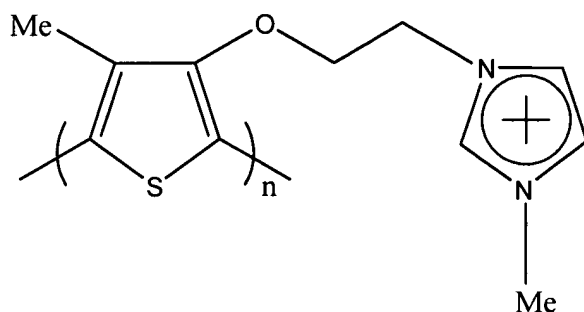


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17. (Currently amended) ~~A method as defined in~~ The method of claim 16, wherein said target is D-adenosine.

18. (Original) A method for detecting a target comprising the steps of:

- a) contacting a sample suspected of containing the target with an aptamer known to be complementary to the target;
- b) further contacting the sample with a water-soluble cationic polythiophene derivative of formula:



wherein “n” is an integer ranging from 6 to 100; and

- c) detecting binding of the aptamer to the target by measuring an optical signal.

19. (Currently amended) ~~A method as defined in~~ The method of claim 18, wherein said optical signal is a UV-Visible absorption or fluorescence spectrum.

20. (Currently amended) ~~A method as defined in~~ The method of claim 19, wherein said target is selected from the group consisting of potassium ions, small organic molecules, amino acids, proteins, whole cells and nucleotides.

21. (Currently amended) ~~A method as defined in~~ The method of claim 19, wherein said aptamer is an oligonucleotide.

22. (Currently amended) ~~A method as defined in~~ The method of claim 21, wherein said oligonucleotide is single-stranded DNA.

23. (Currently amended) ~~A method as defined in~~ The method of claim 22, wherein said single-stranded DNA has the following sequence:



24. (Currently amended) ~~A method as defined in~~ The method of claim 23, wherein said target is human α -thrombin.

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25. (Currently amended) ~~A method as defined in~~ The method of claim 22, wherein said single-stranded DNA has the following sequence:

5'-ATTATACCTGGGGGAGTATTGCGGAGGAAGGTATAAT-3'.

26. (Currently amended) ~~A method as defined in~~ The method of claim 25, wherein said target is D-adenosine.

27-34. (Canceled)

35. (Currently amended) ~~A method as defined in~~ The method of claims 15 and 24 wherein said human α -thrombin is present in an amount of at least 2×10^{-15} mol.

36. (Currently amended) ~~A method as defined in~~ The method of claims 17 and 26 wherein said D-adenosine is present in an amount of at least 2×10^{-14} mol.

37. (New) The method of claim 24, wherein said human α -thrombin is present in an amount of at least 2×10^{-15} mol.

38. (New) The method of claim 26, wherein said D-adenosine is present in an amount of at least 2×10^{-14} mol.